Conference Digest

NEW YORK
UNIVERSITY

NEW
YORK
CITY
August 14 – 18
1989

7th
International
Conference on

BIOMAGNETISM

WELCOME

It is a pleasure to welcome our guests from many countries to the 7th International Conference on Biomagnetism held at New York University, in the great city of New York. This conference includes virtually all of the research areas dealing with magnetic fields accompanying biological processes. The past two decades have seen marked progress in using magnetic measurements as a means to study a diverse variety of activity, ranging in scale from a single cell to the human brain. Applications of this research have made significant impact in many areas, including basic research, clinical applications, and occupational health. We are pleased to have the opportunity with this conference to foster their continued development.

The program features Plenary Sessions of 14 invited presentations, Workshops where four issues of central importance to various areas of biomagnetism are discussed, and Poster Sessions for all 169 contributed papers. Such heavy reliance on posters is new for the series of biomagnetism conferences, but it has become a favorite mode of communication for many scientific associations. The Program Committee is trying this an an experiment this year, and members of the Committee would appreciate your appraisals at the end of the conference. Participants will also be interested in exhibits prepared by corporations having an interest in serving the biomagnetism community.

We are mindful that conferences provide a unique opportunity to make acquaintenceships, and with this in view extra time has been allowed in the program for refreshment breaks. The social program has also been organized to foster interactions, with a welcoming reception on Monday evening, boat cruise around Manhattan on Wednesday evening, and buffet banquet to end the conference on Friday evening.

We hope also that you will make time after the conference to visit some of the unique attractions of "The Big Apple", as our city is affectionately called. Tourist information will be provided to you when you obtain your registration material on arrival at the conference.

The proceedings of the conference will be published by Plenum Press. All corrected manuscripts must be submitted to the Publication Office on arrival at the conference. Any remaining alternations required by the Program Committee must be completed and the manuscript submitted the the Secretariat of the Conference by August 30, 1989. Manuscripts received after that deadline cannot be included. The Proceedings is edited by S.J. Williamson, M. Hoke, M. Kotani, and G. Stroink, and it will be called *Advances in Biomagnetism*. Publication is scheduled for the end of 1989.

We as Co-Chairmen are pleased to welcome you to New York University and sincerely hope that your stay will be both scientifically rewarding and personally enjoyable.

Lloyd Kaufman, Ph.D.
Samuel J. Williamson, Sc.D.
Co-Chairmen

ORGANIZATION

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Sponsors

Air Force Office of Scientific Research (USA)

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New York University

A Topical Conference of the American Physical Society

Program Committee

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USA

Prof. Samuel J. Williamson
Department of Physics
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New York, NY 10003
USA

GENERAL INFORMATION

Venue

Conference activities will be held at New York University, in the Greenwich Village area of Manhattan. Sessions and exhibits are located in Vanderbilt Hall of the NYU Law School, at 40 Washington Square South. This is a brick building with a courtyard at the entrance, on the southwest corner of Washington Square (see map on page 8). While the street defining the south side of Washington Square is known as Washington Square South, its extension to the east and west is called 4th Street. Early arrivals may register on August 12 and 13 at NYU's Third Avenue North Residence Hall, located at the corner of 3rd Avenue and 11th Street. The formal program of the conference will take place at Vanderbilt Hall, beginning on August 14, where the. Registration Desk may be found on the first floor. Also in Vanderbilt Hall are the Conference Office, Publication Office, Press Office, and Speakers' Ready Room, all on the second floor.

Monday evening features a Welcoming Reception, which takes place on the 12th floor of Bobst Library. The Library is a large sandstone building at the southeast corner of Washington Square Park. On Wednesday evening, participants will enjoy a boat cruise around Manhattan. Buses will take participants from the Third Avenue North Residence Hall to the boat dock on the Hudson River, and return them to the Residence Hall. The conference concludes on Friday evening with a buffet banquet to be held in the patio of the Third Avenue North Residence Hall, weather permitting. In case of rain, the banquet will be held on the 12th floor of Bobst Library.

Date

The program begins at 09:00 on Monday, August 14, and ends with the Banquet late Friday evening, August 18. On Sunday, August 13, a series of Biomagnetism Tutorials for registered participants will be held in Meyer Hall of Physics, as explained in a subsequent section.

Secretariat

Information can be obtained before the conference from the Secretariat:

Biomagnetism '89
Department of Physics
2 Washington Place
New York University
New York, New York 10003
U.S.A.

Telephone: (212) 998-7879
Internet: biomag@nyu.edu
Bitnet: biomag@nyuacf.bitnet
Telex: 235128 NYU UR
Telefax: (212) 674-7858

During conference hours, for information call (212) 998-7700. To reach the Third Avenue North Residence Hall, where most participants will stay, call (212) 473-0626.

Registration Fee

The Conference registration fee for participants includes daily refreshments, Reception on Monday evening, Excursion on Wednesday evening, Banquet on Friday evening, the Conference Digest, and the Conference Proceedings. Companions who wish to participate in the Reception, Excursion, and Banquet pay a registration fee to cover these costs.

Participants and companions must wear their name cards at all times when in NYU buildings. They serve as identification when you enter or leave the Residence Halls and Vanderbilt Hall, as well as the sites for social activities. Please cooperate in this matter, to help maintain a high level of security. If you loose your name card, please report it immediately to the Registration Desk or Conference Office.

Registration Fees:	
Participant:	$360
One-day fee (sessions only):	$ 50
Companion:	$130
Child (under 14 years):	$ 60
Conference Digest:	$ 15
Conference Proceedings:	$ 50

On arrival at the conference go to the Registration Desk. Those who have pre-registered can pick up the conference materials. Those who are registering must pay the required fee and then pick up the conference materials. The hours for registration are:

At Third Avenue North Residence Hall:	August 12	12:00 to 24:00
	August 13	07:00 to 24:00
At the Registration Desk in Vanderbilt Hall:	August 14-18	08:00 to 15:00

Housing

Participants who registered for housing before the deadline of May 1, 1989 are guaranteed a place in NYU's Third Avenue North Residence Hall, or another Residence Hall. Participants and companions may stay there until August 20. Those who register later will be provided space if it is available. Contact the Registration Desk for infomation. Third Avenue North provides apartment-style suites with two or three double double bedrooms and a living/dining area, 1 or 2 baths, and kitchen (residents provide their own cooking and eating utensils). Each bedroom has two single beds. The Hall has 24-hour access and desk service. Housing in Third Avenue North at 75 Third Avenue, at the corner with 11th Street, is provided at the following rates:

Semi-private room: A single bed in a room housing two individuals (2 beds per room). The room is part of a suite of 2 or 3 bedrooms for individuals of the same sex. Cost: $30 per night.

Single Occupancy: Private bedroom for one person in a suite of 2 or 3 bedrooms. The suite would be for individuals of the same sex. Cost: $55 per night.

Double Occupancy: Private bedroom (2 single beds) in a 2 or 3 bedroom suite. For couples. Cost: $60 per night.

Private Suite: A suite of 2 or 3 bedrooms with 2 beds in each room. Suitable for a couple or family (must provide own child care). Cost for a two-room suite (4 person maximum): $110 per night. Cost for a three-room suite (6 person maximum): $165 per night.

Biomagnetism Tutorials

A full day of tutorials on central aspects of biomagnetism will be given for registrants on Sunday August 13, the day before the conference, beginning at 09:00 and ending at about 17:00. Intended for those who wish a basic introduction to the fundamentals of biomagnetism, the lectures will be given by outstanding teachers from the biomagnetism community. The Tutors and their topics are:

John P. Wikswo, Jr., Vanderbilt University, U.S.A.
Biomagnetic Sources and their Models

T.E. Katila, Helsinki University of Technology, Finland
Principles and Applications of SQUID Sensors

Gian Luca Romani, University of Chieti, Italy
Principles of Neuromagnetism

Gerhard Stroink, Dalhousie University, Canada
Principles of Cardiomagnetism

Stephen J. Swithenby, The Open University, U.K.
Lung, Liver, Limbs, and Other Divers Topics

These tutorials will be of particular interest to those beginning biomagnetic studies or wishing a review of the fundamentals. Tutorials are free to registered participants from non-profit institutions, such as universities and national laboratories. A fee of $100 will be required for employees of companies other than sponsors of the conference, to be paid at the Registration Desk. Tutorials will be held in Room 121 of Meyer Hall of Physics at New York University, located on the corner of Broadway and Washington Place (see map on page 8). Be sure that you have registered at the Third Avenue North Residence Hall before going to Meyer Hall. The Tutorials will start promptly at 09:00.

Conference Office

Second floor of Vanderbilt Hall. Should you have conference-related problems that cannot be solved at the Registration Desk, contact this office.

Information Desk

For information about the conference or tourism in New York City, go to the Registration Desk. For information about New York University, consult the Information Office at 50 West 4th St.

Lost and Found

Consult the Registration Desk for information about lost and found items.

Luggage Storage & Coat Check

Suitcases, coats, umbrellas, etc. may be stored during the day in the check room on the first floor of Vanderbilt Hall. This is located to the right of the lobby on entering the building.

Message Board

Messages for participants may be attached to a message board in the Foyer just outside Tishman Auditorium, in Vanderbilt Hall.

Publication Office

Second Floor of Vanderbilt Hall. Submit revised manuscripts to the Publication Desk at the Third Avenue North Residence Hall on Saturday August 12 or Sunday August 13. Thereafter they should be submitted to the Publication Office on the Second Floor of Vanderbilt Hall. The deadline for submitting manuscripts is 17:00 on Monday August 14. Should you be informed at the conference that further revisions are necessary, the revised manuscript must be received at NYU by the Secretariat prior to August 30 to be included in the Proceedings. Remember, do *not* send it to the Chair of your Section of the Program Committee.

Press Office

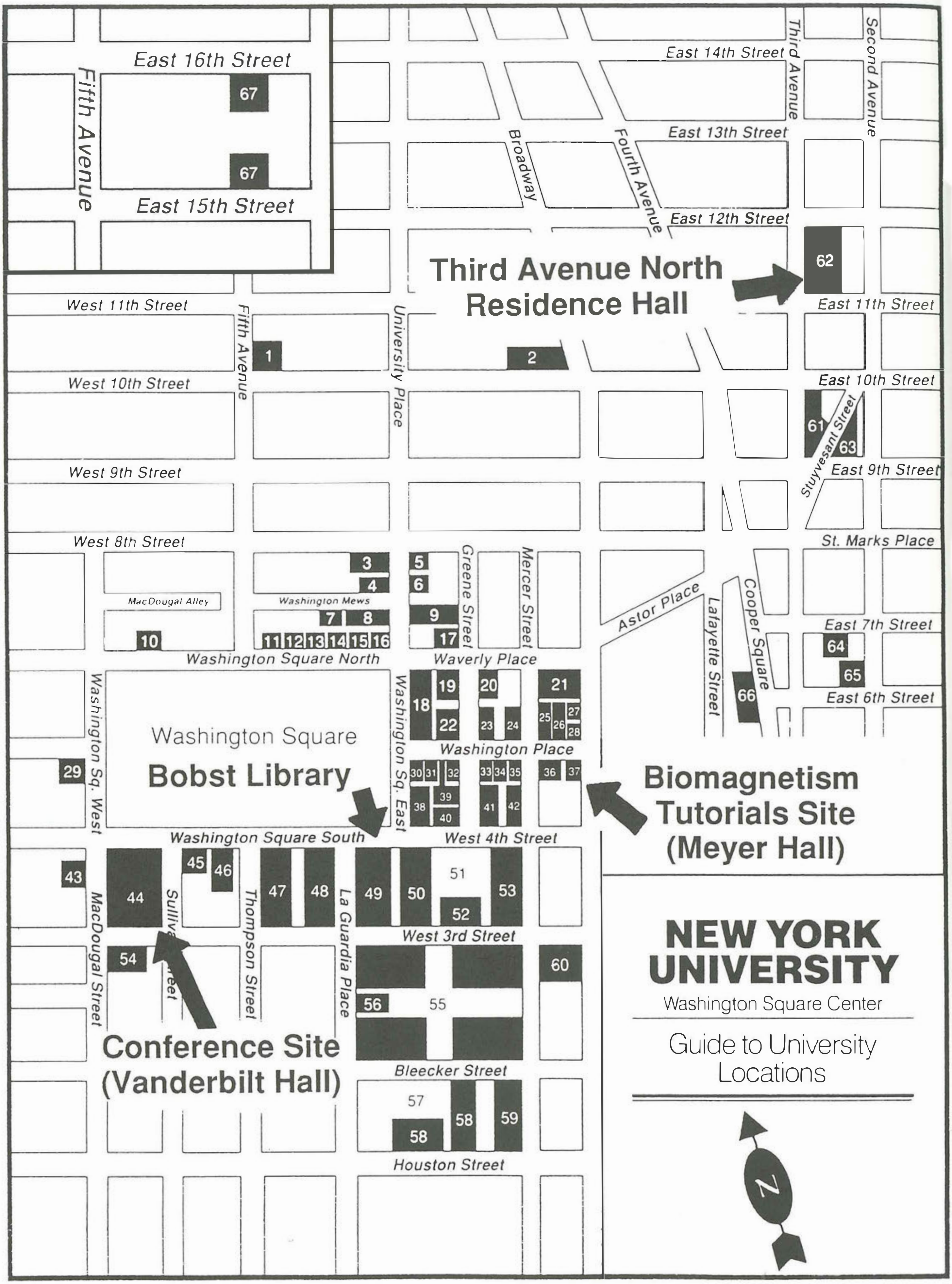
Second Floor of Vanderbilt Hall. Operated by the NYU Public Affairs Department, this office provides information and hospitality for members of the press. For information when the office is not staffed, please call Ms. Zane Berzins at (212) 998-6843.

Restaurants

Greenwich Village offers hundreds of restaurants only a short walk from Vanderbilt Hall. Consult the restaurant guide provided with registration material.

Tourist Information

Tourist information, maps, and a guide to restaurants are provided with registration material. If more help is needed, see go to the Registration Desk.



Third Avenue North Residence Hall

Bobst Library

Biomagnetism Tutorials Site (Meyer Hall)

Conference Site (Vanderbilt Hall)

NEW YORK UNIVERSITY

Washington Square Center

Guide to University Locations

Key to Buildings

1 Rubin Residence Hall, 35 Fifth Avenue
2 Brittany Residence Hall, 55 East 10th Street
3 14 University Place
4 Deutsches Haus, 42 Washington Mews
5 19 University Place
6 13 University Place
7 15 Washington Mews
8 La Maison Française, 16 Washington Mews
9 Weinstein Center for Student Living, 5 University Place
10 Office of Undergraduate Admissions, 22 Washington Square North
11 Gallatin House, 6 Washington Square North
12 Chase House, 5 Washington Square North
13 4 Washington Square North
14 3 Washington Square North
15 2 Washington Square North
16 1 Washington Square North/2 University Place
17 Rufus D. Smith Hall, 25 Waverly Place
18 Main Building, 100 Washington Square East
19 Waverly Building, 24 Waverly Place
20 Kimball Hall, 22 Waverly Place/246 Greene Street
21 Tisch School of the Arts, 721 Broadway
22 Brown Building, 29 Washington Place/245 Greene Street
23 Student Activities Annex, 21 Washington Place
24 7 Washington Place
25 NYU Post Office, 5 Washington Place
26 Fraternity House, 3 Washington Place
27 719 Broadway
28 715 Broadway/1 Washington Place
29 Hayden Residence Hall, 33 Washington Square West
30 Press Building, 32 Washington Place
31 Press Annex, 26 Washington Place
32 The Book Center, 18 Washington Place
33 14-14A Washington Place
34 Arthur L. Carter Hall, 10 Washington Place
35 8 Washington Place
36 Psychology Building, 6 Washington Place
37 Andre and Bella Meyer Hall of Physics, 2-4 Washington Place
38 Leonard Stern Hall, 79-80 Washington Square East
39 East Building, 239 Greene Street
40 Education Building, 35 West Fourth Street
41 23-25 West Fourth Street
42 269 Mercer Street
43 137 MacDougal Street
44 Vanderbilt Hall, 40 Washington Square South
45 Hagop Kevorkian Center for Near Eastern Studies, 50 Washington Square South
46 Judson Residence Hall, 53-54 Washington Square South
47 Catholic Center at NYU, 58 Washington Square South (non-University building)
48 Loeb Student Center, 566 La Guardia Place
49 Elmer Holmes Bobst Library and Study Center, 70 Washington Square South
50 Shimkin Hall, 50 West Fourth Street
51 Gould Plaza
52 Tisch Hall, 40 West Fourth Street
53 Warren Weaver Hall, 251 Mercer Street
54 Filomen D'Agostino Residence Hall, 110 West Third Street
55 Washington Square Village
56 547 La Guardia Place
57 University Plaza
58 Silver Towers, 110 Bleecker Street
59 Coles Sports and Recreation Center, 181 Mercer Street
60 Mercer Street Residence, 240 Mercer Street
61 Third Avenue South Residence, 33 Third Avenue
62 Third Avenue North Residence, 75 Third Avenue (*under construction*)
63 Barney Building, 34 Stuyvesant Street
64 Seventh Street Residence, 40 East Seventh Street
65 111 Second Avenue
66 48 Cooper Square
67 Carlyle Court, 21 East 15th Street, 20 East 16th Street

Key to Services and Activities

Academic Units

Colleges, Schools, and Divisions
21 Tisch School of the Arts
18 College of Arts and Science
52 College of Business and Public Administration
16 School of Continuing Education
30 School of Education, Health, Nursing, and Arts Professions
28 Gallatin Division
14 School of Social Work
11 Graduate School of Arts and Science
44 School of Law
13 Graduate School of Public Administration

Institutes, Centers, and Programs
16 The American Language Institute
28 The Center for Safety
53 Courant Institute of Mathematical Sciences
4 Deutsches Haus
3[illegible] 80 Washington Square East Galleries, 1st Floor
18 Grey Art Gallery and Study Center, 1st Floor
45 Hagop Kevorkian Center for Near Eastern Studies
56 Higher Education Opportunity Program
7 Institute of French Studies
8 La Maison Française
28 Para-Educator Center for Young Adults
13 Urban Research Center

Admissions

10 Office of Undergraduate Admissions, 22 Washington Square North

Graduate Offices
21 Tisch School of the Arts, 7th Floor
11 Graduate School of Arts and Science, Room 14
30 School of Education, Health, Nursing, and Arts Professions, Room 32
10 Gallatin Division, 22 Washington Square North
44 School of Law, Room 419
13 Graduate School of Public Administration, Room 11
15 School of Social Work, Basement

18 Bursar's Office, Room 203

Dining

9 Director, Basement

Student Dining
48 The Commons, Basement
29 Hayden Residence Hall, 1st Floor
1 Rubin Residence Hall, 1st Floor
48 Washington Square Deli (kosher), Basement
9 Weinstein Center, Basement

Financial Aid

41 Office of Financial Aid, 23 West Fourth Street, 1st Floor

Housing

35 Director, University Housing Office, 1st Floor
33 Off-Campus Housing Referral Service

University Residences
2 Brittany Residence Hall
67 Carlyle Court
54 Filomen D'Agostino Residence Hall
64 Seventh Street Residence
29 Hayden Residence Hall
46 Judson Residence Hall
60 Mercer Street Residence
1 Rubin Residence Hall
38 Leonard Stern Hall
62 Third Avenue North Residence (*under construction*)
61 Third Avenue South Residence
9 Weinstein Center for Student Living

University Apartments
58 Silver Towers
55 Washington Square Village

Libraries

49 Elmer Holmes Bobst Library and Study Center
53 Courant Institute of Mathematical Sciences Library, 12th Floor
44 Law Library, 1st Floor

Registration and Recording

18 Office of the Registrar, Room 201

Religious Organizations

47 Catholic Center at NYU
48 Jewish Culture Foundation, 7th Floor
23 Protestant Campus Ministries, Room 802

Student Activities and Affairs

48 Office of Student Life, 2nd Floor
48 Operations, Room 300
48 Program Office, Room 103
23 Student Activities Annex, 1st Floor
23 Womyn's Center, Room 808

Student Services

59 Athletics, Intramurals, and Recreation, Entrance Level
32 The Book Center
27 Career Planning and Placement, Suite 300
59 Coles Sports and Recreation Center
48 Copy Center, Lobby
10 Counseling and Advisement (admissions), 22 Washington Square North
48 Disabilities, Henry and Lucy Moses Center for Students with, Room 701
26 Fraternity House
3, 6 Health Service: Medical (6); Mental (3)
50 Information Center, 1st Floor
23 International Students and Scholars, Office for, 2nd Floor
43 Law Center Bookstore
48 Loeb Box Office, Lobby
48 Lost and Found, Room 101
18 Photo ID Center, Room 418
33 Protection, 1st Floor
48 Student Life, Office of, 2nd Floor
21, 33, 40 Student Computer Terminal Centers: 21, Lower Concourse; 33, Basement; 40, 2nd Floor
23 Student Employment Office, 3rd Floor
48 Travel Information Center, 1st Floor
18 Veterans Counseling Service, Room 201

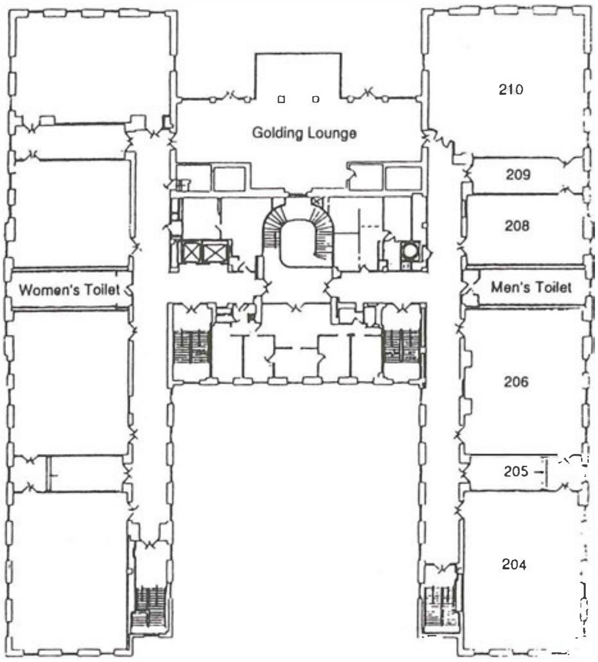
Miscellaneous

41 Development and Alumni Relations, Office for, 25 West Fourth Street, 5th Floor; Alumni Information Center, 242 Greene Street, 1st Floor
42 Institutional Facilities and Administrative Services
54 Law Review Offices, Subbasement
54 Law Journals Offices, Subbasement
28 School of Law Offices: Development, 3rd Floor; Clinical and Advocacy Programs, 4th Floor
25 NYU Mail Services

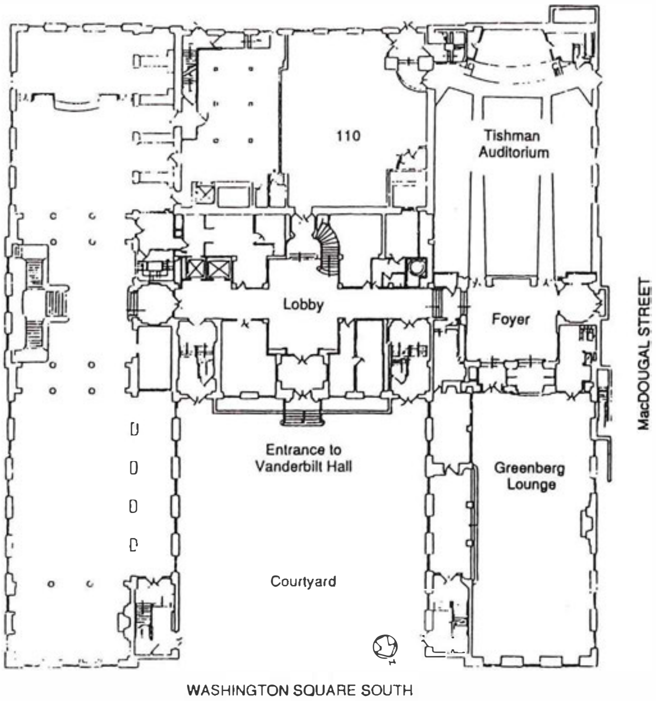
PLAN OF VANDERBILT HALL

All sessions of the conference are held in Vanderbilt Hall of the NYU Law School, located at the corner of Washington Square South and MacDougal Street, at the southwest corner of Washington Square Park. This brick building is reached by entering a small courtyard facing the Park. Refreshments at the mid-morning and mid-afternoon breaks will be served in Greenberg Lounge and Golding Lounge.

Second Floor Plan



First Floor Plan



CONFERENCE SCHEDULE

	MONDAY 14 August	TUESDAY 15 August	WEDNESDAY 16 August	THURSDAY 17 August	FRIDAY 18 August
09:00	Plenary Session (Tishman) *Welcome* Kaufman Williamson *Auditory MEG* Hari	Plenary Session (Tishman) *20th Anniversary* Zimmerman Edelsack	Plenary Session (Tishman) *Clinical MCG* Nakaya *Arrhythmias* Mellilo	Plenary Session (Tishman) *Multisensors* Hämäläinen *Microparticles* Valberg	Plenary Session (Tishman) *Volume Current* Soares *Ambassador of* *Thorasic Modeling* van Oosterom
10:30	Refreshments	Refreshments	Refreshments	Refreshments	Refreshments
11:00	Plenary Session (Tishman) *Physiology of MEG* Okada *Ambassador of* *Neurosciences* Llinás	Plenary Session (Tishman) *High-T_C SQUID* Koch *Epilepsy* Elger	Plenary Session (Tishman) *Ambassador of* *Cardiology* Harumi	Poster Session *Clinical* *Applications of MCG* *& Physiology* *Visually Evoked* *MEG Responses*	Poster Session *Methods and* *Shielding*
11:45			Poster Session *Source Localization*		
12:30	Lunch Break	Lunch Break		Lunch Break	Lunch Break
14:00	Workshop (Room 110) *Arrhythmias* *of the Heart*	Workshop (Room 110) *Epilepsy*	Afternoon Free	General Meeting (Tishman)	Workshop (Room 110) *Multisensor* *Instrumentation*
15:00	Poster Session *Auditory Evoked* *MEG Responses* *Nerve Conduction*	Poster Session *Cardiac Conduction* *& Physiology* *Diverse Applications*		Poster Session *SQUID* *Instrumentation*	Poster Session *Spontaneous* *Brain Activity* *Higher Brain* *Functions*
16:00	Refreshments	Refreshments		Refreshments	
16:30	Poster Session *Magnetic Particles* *of the Lung* *Susceptibility* *of Tissue* *Modeling the Head*	Poster Session *Clinical* *Applications of MEG* *& Physiology* *Analysis* *of Data*			Plenary Session (Tishman) *Finale*
17:00				Workshop (Room 110) *Numerical* *Modeling* Poster Session *Somatomotor* *MEG Activity*	
18:30	End	End	18:00 Buses Leave Residence Hall	End	
19:00	Welcoming Reception (Bobst Library 12th Floor)		Conference Excursion (Circle Line at 42 St. Terminal)		Banquet (Courtyard, Third Avenue North Residence Hall)

PROGRAM

Monday, August 14

09:00 - 10:30 **Plenary Session** (Tishman Auditorium)

Welcome
L. Kaufman (Co-Chairman)
S.J. Williamson (Co-Chairman)

IN-07 *Activation of Human Auditory Cortex by Various Sound Sequences*
R. Hari, Helsinki University of Technology, Espoo, Finland

10:30 - 11:00 **Refreshments**

11:00 - 12:30 **Plenary Session** (Tishman Auditorium)
Chair: K. Atsumi, University of Tokyo, Tokyo, Japan

IN-08 *Recent Developments on the Physiological Basis of Magnetoencephalography*
Y.C. Okada, New York University, New York City, U.S.A.

IN-09 *Ambassador of Neurosciences*
R. Llinás, New York University, New York City, U.S.A.

12:30 - 14:00 **Lunch**

14:00 - 18:30 **Commercial Exhibits** (Greenberg Lounge)
Commercial exhibits will be open daily until 18:30, except for Friday when they will close at 13:00.

14:00 - 16:00 **Workshop** (Room 110)

Arrhythmias of the Heart
Moderator: R.R. Fenici
S. Erné, R. Gonnelli, T. Katila, L. Schmitz, and G. Stroink

Poster Session (Golding Lounge)
Chair: D. Cohen, Massachusetts Institute of Technology, Cambridge, U.S.A.

Auditory Evoked MEG Responses

EU-06 1 Selective Averaging in Auditory Evoked Magnetic Field Experiments
K.B. Mikkelsen, K. Saermark, J. Lebech, C.K. Bak, and E. Basar, Denmark and F.R.G.

EU-29 2 Frequency-Specific Sources of the Auditory N19-P30 Detected by a Multiple Source Analysis of Evoked Magnetic Fields and Potentials
M. Scherg, R. Hari, and M. Hämäläinen, F.R.G. and Finland

AM-21	3	Replicability for Localization of the P1, N1, and P2 Components of the Auditory Evoked Responses in an Unselected Group of Subjects S. Baumann, R. Rogers and A. Papanicolaou, U.S.A.
EU-80	4	Tonotopic Organization of the Auditory Cortex Revisited: Frequency Versus Pitch Representation C. Pantev, M. Hoke, and B. Lütkenhöner, F.R.G.
AM-65	5	Localization of Auditory N100m with Inclusion of Volume Current Effects D.F. Rose, A. Reeve, S. Sato, E. Ducla-Soares, and D.R. Weinberger, U.S.A.
AM-20	6	Nonstationary Dynamics of Sequential Magnetic Dipole Changes Associated with N100 Auditory Evoked Responses R.L. Rogers, A.C. Papanicolaou, S. Baumann, C. Saydjari, and H.M. Eisenberg, U.S.A.
AM-47	7	Hemispheric Asymmetry and the N100 Component of the Auditory Evoked Potential L. Kaufman, B. Butensky, and S.J. Williamson, U.S.A.
AS-09	8	Event Related Potentials and Fields Evoked by Auditory Stimuli: Effects of Interstimulus Interval and Selective Attention S. Kuriki, F. Takeuchi, and M. Murase, Japan
AM-31	9	Neural Mechanisms of Selective Auditory Attention D. Arthur, S. Hillyard, E. Flynn, and A. Schmidt, U.S.A.
EU-55	10	Neuromagnetic Responses to Infrequent Changes in Periodicity Pitch S.T. Lu, R. Hari, and M. Sams, Finland
EU-56	11	Paired Tone Presentation Enhances Responses of Human Auditory Cortex to Rare Frequency Changes J. Rif, R. Hari, and J. Tiihonen, Finland
AM-81	12	Resonant Systems in the Brain H. Weinberg, P. Cohen, B. Johnson, D. Crisp, and A.W. Robertson, Canada
EU-46	13	Neuromagnetic Responses of the Human Auditory Cortex to Different Types of Deviant Stimuli M. Sams and E. Kaukoranta, Finland
AS-10	14	Specificity of Neuromagnetic Responses in the Human Auditory Cortex to Consonants of Monosyllable Speech Sounds S. Kuriki, M. Murase, and F. Takeuchi, Japan

Nerve Conduction

EU-72	15	Short-Latency Somatosensory Evoked Magnetic Fields Recorded Over the Brachial Plexus and Cervical Spine in Man G. Curio, S.N. Erné, J. Scheer, R. Stehr, and L. Trahms, F.R.G.
AM-60	16	Intraoperative Recording of the Magnetic Field of A Human Nerve J.P. Wikswo, W.P. Henry, R.N. Friedman, A.W. Kilroy, R.S. Wijesinghe, J.M. van Egeraat, and M.A. Milek, U.S.A.

AM-12 17 A Comparative Study of Compound Action Potentials and Currents
K.W. Kim, D.J. Engle, J.P. Wikswo and R.J. Sclabassi, U.S.A.

AS-29 18 Estimation of Both Conduction Velocities and the Number of Firing Nerve Fibers from Magnetic Fields Outside A Volume Conductor
S. Ueno and S. Suzuki, Japan

16:00 - 16:30 **Refreshments**

16:30 - 18:30 **Poster Session** (Golding Lounge)
Chair: M. Kotani, Tokyo Denki University, Tokyo, Japan

Magnetic Particles of the Lung

AS-33 1 Estimation of Energy of Intracellular Movement and Apparent Viscosity by Magnetometry
I. Nemoto, Japan

EU-01 2 Intracellular Motility of Pulmonary Macrophages from Smokers and Non-Smokers Estimated by Cytomagnetometry
P. Gehr, V. Im Hof, and M. Klauser, Switzerland

EU-64 3 Welding Fume Retention in Lungs of Previously Unexposed Subjects
M. Forsman and P. Högstedt, Sweden

EU-15 4 In Vivo SQUID Measurements of the Magnetised Human Thorax
D. Rassi, B.H. Blott, H. Al-Sewaidan, and S. Davies, U.K. and Finland

EU-14 5 A Study of Magnetic Contaminants in Post Mortem Lung Samples from Asbestos Miners
D. Rassi, V. Timbrell, H. Al-Sewaidan, S. Davies, O. Taikina-aho, and P. Pääkkö, U.K.

AS-32 6 Effects of Latex and Different Doses of Silica on Behavior of Iron Particles in Rabbit Lungs
Y. Aizawa, T. Takata, K. Hashimoto, M. Tominaga, H. Tatsumi, M. Kotani, and K. Chiyotani, Japan

AS-01 7 Research on Biomagnetic Technique Used for Tracing Pneumoconiosis of Metallurgical Workers
Y. Baigang, X. Ke, H. Peilie, and L. Lian, P.R.C.

Susceptibility of Tissue

AM-57 8 The Hamburg Biosusceptometer for Liver Iron Quantification
D.N. Paulson, R. Fischer, R. Engelhardt, and H.C. Heinrich, U.S.A.

EU-36 9 The Inverse Problem in Liver Susceptometry
R. Fischer, R. Engelhardt, E. Eich, E.E. Gabbe, H.C. Heinrich, W.D. Lehmann, and P. Nielsen, F.R.G.

EU-60 10 Magnetic Mapping of DC Fields Related to Tissue Susceptibility in the Human Body
S. Di Luzio, G. Obletter, S. Comani, C. Del Gratta, G.L. Romani, Italy

EU-42 11 Magnetic Susceptibilities of Tissues Extracted from the Atlantic Salmon
A. Moore, S.M. Freake, and I.M. Thomas, U.K.

Modeling the Head

AM-68 12 Preliminary Tests of MEG and EEG Localization in a Homogeneous Saline Head
R. Maniewski, D. Cohen, B.N. Cuffin, K. Yunokuchi, and C. Purcell, U.S.A.

AM-59 13 Effects of Head Shape on MEG's and EEG's
B.N. Cuffin, U.S.A.

AM-66 14 Estimates of Skull Conductivity Using Combined MEG and EEG Inverse Solutions
C. Purcell and B.N. Cuffin, U.S.A.

AM-83 15 Efficient Methods for the Magnetic Direct Solution in Realistic Geometry
S.L. Gonzalez, R. Grave de Peralta, R. Biscay, J.C. Jimenez, R.D. Pascual, and P.A. Valdes, Cuba

EU-49 16 On the Influence of an Anisotropic Spherical Model of the Head on the MEG and EEG
M.J. Peters, The Netherlands

AS-26 17 Mechanism of Flux Reversal Phenomena in Spatial Distributions of the Magnetoencephalograms
K. Iramina and S. Ueno, Japan

EU-74 18 Constructing a Realistically Shaped Model of the Human Head
V.A. Konyshev, R.A. Maragey, Y.A. Kholodov, V.M. Verkhlutov, and A.M. Gorbach, U.S.S.R.

AM-64 19 A Study of the Brain Conductivity for MEG Research
E. Ducla-Soares, S. Sato, D. Rose, and C. Kufta, U.S.A.

19:00 - 21:00 **Welcoming Reception**
(Bobst Library, Washington Square South, 12th Floor)

Hosted by Biomagnetic Technologies, Inc.

Tuesday, August 15

09:00 - 10:30 **Plenary Session** (Tishman Auditorium)
20th Anniversary of Introducing the SQUID to Biomagnetism
Chair: T.E. Katila, Helsinki University of Technology, Espoo, Finland

IN-01 *Evaluation of the SQUID and its use in Biomagnetic Measurements*
J.E. Zimmerman, National Bureau of Standards, Boulder, U.S.A. (retired)

IN-02 *A Vicennial View of SQUID Magnetocardiography*
E. Edelsack, Office of Naval Research, Washington, U.S.A. (retired)

10:30 - 11:00 **Refreshments**

11:00 - 12:30 **Plenary Session** (Tishman Auditorium)
Chair: V. Vvedensky, Kurchatov Institute of Atomic Energy, Moscow, U.S.S.R.

IN-03 *Recent Developments in High T_c SQUIDs*
R. Koch, IBM Corporation, Yorktown Heights, U.S.A.

IN-06 *Neuromagnetic Studies of Epilepsy*
C.E. Elger, University of Bonn, Bonn, F.R.G.

12:30 - 14:00 **Lunch**

14:00 - 16:00 **Workshop** (Room 110)

Epilepsy
Moderator: G.L. Romani
G. Ricci, S. Sato, W. Sutherling, H. Weinberg, and J. Vieth

Poster Session (Golding Lounge)
Chair: P. Costa Ribeiro, Pontifica Universidade Catolica, Rio de Janeiro, Brazil

Cardiac Conduction and Physiology

EU-04 1 High Resolution Magnetocardiography, Source Localization and Multichannel Magnetometry
G. Albrecht, M. Burghoff, F. Gieler, W. Haberkorn, and H. Nowak, G.D.R.

EU-02 2 Dynamic Magnetic Study of the Heart Conduction System
E.E. Godik, Y.V. Gulyaev, A.Y. Lipovich, A.N. Matlashov, and Yu. Zhuravlev, U.S.S.R.

AM-76 3 Evaluation of Techniques Used to Extract His-Purkinje System Spatial Distributions
R. Lamothe, G. Stroink, and C.J. Kafer, Canada

EU-65 4 Magnetocardiographbic Localization of a Pacing Catheter
R.R. Fenici, G. Melillo, A. Cappelli, C. De Luca, and M. Masselli, Italy

EU-66 5 Magnetocardiographic Localization of Kent Bundles
R.R. Fenici, G. Melillo, A. Cappelli, C. De Luca, and M. Messelli, Italy

EU-17 6 Application of a Multichannel System to the Comparative Localization of Accessory Conduction Pathways in Patients with WPW Syndrome
K. Abraham-Fuchs, A. Weikl, S. Schneider, W. Moshage, G. Röhrlein, A. Wirth, K. Bachmann, R. Schittenhelm, F.R.G.

AS-22 7 Detection of Accessory Pathway in Patients with WPW Syndrome by Means of the Isomagnetic Map and MRI
M. Nomura, Y. Nakaya, K. Watanebe, M. Katayama, A. Takeuchi, K. Fujino, and H. Mori, Japan

EU-33 8 ECG and MCG Studies on the HIS-Purkinje Activity in a Case of Congenital Heart Block
M. Leiniö, J. Montonen, M. Mäkijärvi, K. Mäkiniemi, J. Nenonen, T. Katila, and P. Siltanen, Finland

EU-34 9 High-Resolution Magnetocardiographic Mapping of the Pre-Excitation in Wolff-Parkinson-White Syndrome
M. Mäkijärvi, J. Nenonen, M. Leiniö, J. Montonen, K. Mäkiniemi, T. Schulman, T. Katila, and P. Siltanen, Finland

EU-35 10 Analysis of High Resolution MCG Recordings of Patients with Ventricular Tachycardia
J. Montonen, M. Leiniö, K. Mäkiniemi, M. Mäkijärvi, J. Nenonen, T. Katila, and P. Siltanen, Finland

AM-39 11 Detection of Magnetic Atrial Flutter Waves in Isolated Rabbits Hearts
P. Costa Ribeiro, A.C. Bruno, E. Parente Ribeiro, S.J. do Carmo, E. Costa Monteiro and A. Fonseca Costa, Brazil

EU-53 12 The Magnetic Field of Isolated Rabbit Heart
R.S. Gonnelli, G.F. Durin, A. Sanmartino, and E. Rosettani, Italy

Diverse Applications

EU-50 13 Ionic Currents Within Developing Chick Eggs
S.M. Freake, B.S. Janday, S.J. Swithenby, and I.M. Thomas, U.K.

AM-75 14 Detection of Magnetic Fields Associated with the Electric Organ of Gymnotus Carapó
O. Baffa, S. Lopes Côrrea, C.A. Pelá, and A. Tannus, Brazil

EU-93 15 Measurement of Magnetic Field Near An Acute Surgical Wound on the Rabbit's Thigh
Z. Trontelj, J. Pirnat, J. Lužnik, V. Jazbinšek, V. Valenčič, D. Križaj, L. Vodovnik, A. Jerčinović, Yugoslavia

AS-02 16 Biochemical Magnetite Formation and Its Application
T. Hamaya and K. Horikoshi, Japan

AS-13 17 Immunosensor Using Bacterial Magnetites
T. Matsunaga, Japan

AM-73 18 Borrowing Concepts from Biomagnetism in Developing a Focal Magnetic Stimulator
K. Yunokuchi, D. Cohen, and B.N. Cuffin, U.S.A.

AS-25 19 Localized Stimulation of the Human Cortex by Opposing Magnetic Fields
S. Ueno, T. Matsuda, and M. Fujiki, Japan

16:00 - 16:30 **Refreshments**

16:30 - 18:30 **Poster Session** (Golding Lounge)
Chair: H. Weinberg, Simon Fraser University, Burnaby, Canada

Clinical Applications of MEG and Physiology

EU-18 1 Application of a Multichannel MEG System in Temporal Lobe Epilepsy
H. Stefan, S. Schneider, K. Abraham-Fuchs, J. Bauer, H. Feistel, U. Neubauer, W.J. Huk, G. Röhrlein, and J. Uebler, F.R.G.

EU-91 2 Mapping of MEG and EEG in Normals and Epileptic Patients
Yu.A. Kholodov, A.M. Gorbach, V.M. Verkhlutov, R.A. Maragey, and V.A. Konyshev, U.S.S.R.

EU-82 3 Template Analysis on Neuromagnetic Data from Cases of Focal and Generalized Epilepsy
G.B. Ricci, S.N. Erné, C. Del Gratta, M. Peresson, V. Pizzella, G.L. Romani, and G. Torrioli, Italy and F.R.G.

AM-51 4 Localization of Lateral Fronto-Central Seizures in Relation to Sensorimotor Cortex
W.W. Sutherling, C. Baumgartner, T.M. Darcey, and D.S. Barth, U.S.A.

AM-02 5 Multiple Source Modeling of the Human Epileptic Spike Complex in the Magnetoencephalogram
C. Baumgartner, W.W. Sutherling, S. Di, and D.S. Barth, U.S.A. and Austria

EU-10 6 Preliminary Results of Simultaneous MEG, EEG and Foramen Ovale Electrode Recordings of Epileptic Patients
C.N. Guy, P. Fenwick, C. Binney, S. Walker, and A. Cayless, U.K.

EU-28 7 Ischemic and Epileptic Lesions Measured by AC- and DC-MEG
J. Vieth, G. Sack, P. Schueler, P. Grummich, and S. Schneider, F.R.G.

AM-35 8 Neuropathological Dynamics of Magnetic, Auditory Steady-State Responses in Alzheimer's Disease
U. Ribary, R.R. Llinás, A. Kluger, J. Suk, and S.H. Ferris, U.S.A.

EU-39 9 The Use of Flash and Pattern Evoked Fields in the Diagnosis of Alzheimer's Disease
R.A. Armstrong, B. Janday, A. Slaven, and G.F.A. Harding, U.K.

EU-79 10 Objective Evidence of Tinnitus in Auditory Evoked Magnetic Fields
M. Hoke, H. Feldman, C. Pantev, B. Lütkenhöner, K. Lehnertz, and W. Kumpf, F.R.G.

AM-52 11 Observation of Spreading Cortical Depression in Rabbits
A.R. Gardner-Medwin, N. Tepley, G.L. Barkley, J. Moran, S. Nagel-Leiby, R.T. Simkins, and K.M.A. Welch, U.K. and U.S.A.

AM-53 12 Observation of Spreading Cortical Depression in Migraine Patients
N. Tepley, G.L. Barklay, J. Moran, R.T. Simkins, and K.M.A. Welch, U.S.A.

AM-55 13 Comparative Study of Transmembrane Potential and Magnetic Evoked Field During Applied Electric Field in the Turtle Cerebellum
L. Lopez, Y.C. Okada, C.Y. Chan, and C. Nicholson, U.S.A.

AM-56 14 Conductivity Boundaries May Produce Stronger Magnetic Fields than the Primary Source: Comparison of Three Analytical Methods
J.-C. Huang, Y.C. Okada, and C. Nicholson, U.S.A.

AM-04 15 In Vivo Neuromagnetic Study of Normal and Pathological Intracellular Current in Rat Cortex
S. Di, C. Baumgartner, W.W. Sutherling, and D.S. Barth, U.S.A., P.R.C., and Austria

Analysis of Data

EU-81 16 Compression of Biomagnetic Data by Combining Linear Predictive Coding and Huffman Coding
B. Lütkenhöner, C. Pantev, M. Hoke, and K. Lehnertz, F.R.G.

EU-43 17 An Interactive Computer-Approach for MEG-Signal Processing
J.H. Voskamp, R. Niessen, A.J. van der Wal, The Netherlands

EU-45 18 Channel Capacity of Multichnnel Magnetometers
P.K. Kemppainen and R.J. Ilmoniemi, Finland

Wednesday, August 16

09:00 - 10:30 **Plenary Session** (Tishman Auditorium)
Chair: G. Stoink, Dalhousie University, Halifax, Canada

IN-04 *Clinical Value of Magnetocardiographic Mapping*
Y. Nakaya, University of Tokushima, Tokushima, Japan

IN-14 *Biomagnetic Imaging in the Cardiac Catheterization Laboratory*
G. Melillo, Catholic University, Rome, Italy

10:30 - 11:00 **Refreshments**

11:00 - 11:45 **Plenary Session** (Tishman Auditorium)
Chair: H. Mori, University of Tokushima, Tokushima, Japan

IN-05 *Ambassador of Cardiology*
K. Harumi, Showa University, Yokohama, Japan

11:45 - 13:30 **Poster Session** (Golding Lounge)
Chair: S. Ueno, Kyushu University, Fukuoka, Japan

Source Localization

AM-01 1 A Variation Principle for the Return Current in Biomagnetism
L. Heller, U.S.A.

AM-33 2 Monte Carlo Analysis of Localization Errors in Magnetoencephalography
P.A. Medvick, P.S. Lewis, C. Aine, and E.R. Flynn, U.S.A.

AM-17 3 Impact of Different Noise Sources on Dipole Localization in the Spherical Model: A Simulation
D.C. Buchanan, U.S.A.

AM-07 4 Magnetoencephalographic Localization of Simulated Evoked Response Sources Affirms the Importance of Adequate Modeling
P.J. DeRego and A.F. Badeau, U.S.A.

AM-50 5 Improved Methods for MEG Inverse Dipole Estimation
L. Goldstein, P. Teale, and M. Reite, U.S.A.

EU-94 6 Influence of the Finite Pickup Coil Size on the Location of Current Sources with Quadrupolar Components
V. Jazbinšek, Z. Trontelj, S.N. Erné, L. Trahms, Yugoslavia and F.R.G.

EU-87 7 Considerations on A Spatio-Temporal Two-Dipole Model
K. Lehnertz, B. Lütkenhöner, M. Hoke, and C. Pantev, F.R.G.

AM-63 8 Selectivity of MEG and Discrimination of Multiple Dipoles
E. Ducla-Soares, S. Sato, and D. Rose, U.S.A.

EU-51 9 Rule-Based Location of Multiple Current-Dipole Sources from Biomagnetic Data
N.M. Palfreyman, K.D. Singh, and S.J. Swithenby, U.K.

EU-47 10 A Linear Estimation Approach to Biomagnetic Imaging
W.H. Kullmann, K.D. Jandt, K. Rehm, H.A. Schlitt, W.J. Dallas, and W.E. Smith, F.R.G.

AS-08 11 Discussion of Biomagnetic Imaging System and Reconstruction Algorithm
H. Haneishi, N. Ohyama, and K. Sekihara, Japan

AM-24 12 Theory and Properties of Lead Field Synthesis Analysis
S.E. Robinson, U.S.A.

AS-18 13 Direct Approach to An Inverse Problem: A Trial to Describe Signal Sources by Current Elements Distribution
H. Kado, S. Kashiwaya, M. Higuchi, and H. Miura, Japan

AM-41 14 Magnetic Fields of Current Monopoles
A.S. Ferguson and D. Durand, U.S.A.

EU-13 15 Localised and Distributed Source Solutions for the Biomagnetic Inverse Problem
C.J.S. Clarke and A.A. Ioannides, U.K.

EU-26 16 Random Dipoles as A Model for EEG-Background Activity
J.C. De Munck, P.C.M. Vijn, and H. Spekreijse, The Netherlands

AM-18 17 Minimum Norm Estimation of Current Distributions in Realistic Geometries
C.W. Crowley, R.E. Greenblatt and I. Khalil, U.S.A.

AM-34 18 Source Activity Mapping from Biomagnetic Data by Minimum Norm Estimation
R.E. Greenblatt, C.W. Crowley, and I. Khalil, U.S.A.

AM-11 19 Localizing Abnormalities in Mapping
S.S. Furuie, U. Tachinardi, S. Sirota, and C.P. Melo, Brazil

13:30 - **Afternoon Is Free**

18:00 - 22:00 **Boat Excursion around Manhattan**

Buses leave from NYU's Third Avenue North Residence Hall to take participants to Pier 83, from which the boat departs. *(Last bus leaves at 18:30)*. Those who do not wish to take a bus may find their own way to Pier 83, which is on the Hudson River, at the west end of 42nd Street. It is next to a large, gray aircraft carrier serving now as a museum. Be sure to wear your name badge!

19:00 Circle Line boat departs

22:00 Boat returns to Pier 83

Buses return participants to Third Avenue North Residence Hall. One bus will return via the Grand Hyatt Hotel (at Grand Central Station) and nearby hotels.

Thursday, August 17

09:00 - 10:30 **Plenary Session** (Tishman Auditorium)
Chair: T. Ohtsuka, ULVAC Corporation, Chigasaki, Japan

IN-11 *A 24-Channel Planar Gradiometer: System Design and Analysis of Neuromagnetic Data*
M. Hämäläinen, Helsinki University of Technology, Espoo, Finland

IN-10 *Magnetic Microparticles Can Measure Whole-Body Clearance, Cell Organelle Motions, and Polymer Viscoelasticity*
P. Valberg, Harvard University, Boston, U.S.A.

10:30 - 11:00 **Refreshments**

11:00 - 12:30 **Poster Session** (Golding Lounge)
Chair: D. Barth, University of California, Los Angeles, U.S.A.

Clinical Applications of MCG

AS-03 1 Detection of the Abnormal Repolarization Vector in Diabetes Mellitus by Means of the Isomagnetic Map
M. Nomura, K. Watanabe, M. Katayama, A. Takeuchi, K. Fujino, Y. Nakaya, and H. Mori, Japan

EU-62 2 Magnetocardiography in Patients with the Long QT-Syndrome
K. Brockmeier, L. Schmitz, L. Trahms, and S.N. Erné, F.R.G.

AS-28 3 Measurement of Cardiac Magnetic Field Vector
Y. Sakauchi, H. Kado, N. Awano, N. Kasai, M. Higuchi, K. Chinone, M. Nakanishi, M. Koyanagi, K. Ohwada, and S. Kariyone, Japan

AM-71 4 Classification of Infarcts Using Electric and Magnetic Inverse Solutions
C. Purcell and G. Stroink, Canada

AM-78 5 Clinical Descrimination of Patient Groups Using Magnetic and Electric Map Extrema Trajectory Plots
J. Lant, G. Stroink, D. Vardy, and M.J. Gardner, Canada

AM-77 6 Magnetocardiographic and Electrocardiographic Recordings of Patients with Ventricular Tachycardia
G. Stroink, D. Vardy, R. Lamothe, and M. Gardner, Canada

EU-58 7 Reproducibility of Magnetocardiographic Imaging of Arrhythmias
R.R. Fenici, G. Melillo, A. Cappelli, C. De Luca, and M. Masselli, Italy

AM-10 8 The Influence of Heart Motion on Magnetic Fields
U. Tachinardi, S.S. Furuie, S. Sirota and C.P. Melo, Brazil

EU-05 9 Effect of Constitutional Variables on Magnetocardiogram
J. Nousiainen, O.S. Oja, and J. Malmivuo, Finland

EU-63 10 Magnetocardiography in Patients with Cardiomyopathy and Operated Congenital Heart Disease
L. Schmitz, K. Brochmeier, L. Trahms, S.N. Erné, F.R.G.

AS-04	11	The Magnetocardiogram in Patients with Systolic and Diastolic Overload of the Right Ventricle M. Katayama, M. Nomura, K. Watanabe, A. Takeuchi, K. Fujino, Y. Nakaya, and H. Mori, Japan
EU-09	12	Foetal Magnetocardiography S.R. Walker, K.E. Leedham-Green, and C.N. Guy, U.K.

Visually Evoked MEG Responses

EU-48	13	Magnetic Investigation of the Retinotoptic Organization of the Visual Cortex Z. Dunajski and M. Peters, Poland
AM-29	14	Localization of the Transient Visual Evoked Neuromagnetic Response: Resolution of Multiple Sources C.J. Aine, J.S. George, P.A. Medvick, M.T. Oakley, and E.R. Flynn, U.S.A.
AM-28	15	Spatial / Temporal Resolution of Multiple Sources: Path of Activation in Human Visual Cortex J.S. George, C.J. Aine, P.A. Medvick, and E.R. Flynn, U.S.A.
AM-09	16	A Frequency Domain Technique for Using Evoked Magnetic Fields to Test Multi-Stage Models of Sensory Processing M.P. Regan and D. Regan, Canada
AM-08	17	Ultra-High Resolution Recording of Auditory and Visual Brain Responses Using Zoom-FFT D. Regan and M.P. Regan, Canada
AM-48	18	Neuromagnetic Measurements of Visual Responses to Chromaticity and Luminance J. Krauskopf, G. Klemic, O.V. Lounasmaa, D. Travis, L. Kaufman, and S.J. Williamson, U.S.A. and Finland
AM-46	19	Brain Activity Related to Spatial Visual Attention B. Luber, L. Kaufman, and S.J. Williamson, U.S.A.
AM-23	20	Temporal Variability of the Neuromagnetic Evoked Field: Implications for Human Performance Assessment G.W. Lewis, L.J. Trejo, P. Naitoh, M.H. Blankenship, and M. Inlow, U.S.A.
AM-06	21	Crossmodal Interactions of Auditory Stimulus Presentation on the Visual Evoked Magnetic Response C. Busch, G. Wilson, C. Orr, and A. Papaniclaou, U.S.A.
AM-30	22	Scalp Distribution of Magnetic Fields Generated by Horizontal Eye Movements and Eye Blinks M.T. Oakley, G. Sullivan, S.B.W. Roeder, and E.R. Flynn, U.S.A.

12:30 - 14:00 **Lunch**

14:00 - 15:00 **General Meeting** (Tishman Auditorium)

Chair:
K. Atsumi, University of Tokyo, Tokyo, Japan
Chairman of the Advisory Committee

Conference Business

Selection of the 1993 Conference Location

15:00 - 16:30 **Poster Session** (Golding Lounge)
Chair: J.E. Zimmerman, National Bureau of Standards (retired), U.S.A.

SQUID Instrumentation

AS-21 1 Improved SQUID Magnetometer with an External Feedback Circuit
Y. Igarashi, T. Hayashi, T. Goto, N. Fujimaki, K. Kawabe, T. Shimura, and H. Hayashi, Japan

EU-71 2 Sensing-Coil Optimization Based on Signal-to-Noise Ratio
H.J.M. ter Brake, The Netherlands

AM-62 3 Designing Planar Gradiometer Arrays: Preliminary Considerations
A.C. Bruno and P. Costa Ribeiro, Brazil

AS-17 4 Pb-In Wire Bonding for Superconducting Connection between Thin Film DC-SQUID and Pickup Coil
S. Kiryu, T. Ogashiwa, K. Chinone, N. Kasai, H. Kado, N. Ishikawa, M. Nakanishi, and M. Koyanagi, Japan

AS-07 5 A Single-Chip SQUID
N. Fujimaki, H. Tamura, H. Suzuki, T. Imamura, S. Hasuo, and A. Shibatomi, Japan

EU-52 6 The Use of Off-Diagonal Thin Film Gradiometers in A Four-Channel Magnetometer
S.M. Freake, K.D. Singh, and S.J. Swithenby, U.K.

EU-11 7 A Seven Channel Biomagnetometer
C.N. Guy, A. Cayless, S. Walker, and K. Leedham-Green, U.K.

EU-84 8 A Nine Channel DC SQUID System for Biomagnetism
P. Carreli, C. Del Gratta, V. Foglietti, I. Modena, V. Pizzella, M. Pullano, G.L. Romani, G. Torrioli, Italy

EU-19 9 Development and Performance of A Multichannel System for Studies of Biomagnetic Signals of Brain and Heart
S. Schneider, K. Abraham-Fuchs, G. Daalmans, W. Folberth, H.E. Hoening, H. Reichenberger, G. Röhrlein, H. Seifert, and A. Wirth, F.R.G.

EU-54 10 A 24-Channel Magnetometer for Brain Research
M. Kajola, S. Ahlfors, G.J. Ehnholm, J. Hällström, M.S. Hämäläinen, R.J. Ilmoniemi, M. Kiviranta, J. Knuutila, O.V. Lounasmaa, C.D. Tesche, and V. Vilkman, Finland and U.S.A.

AM-80 11 MicroSQUID: A Close-Spaced Four Channel Magnetometer
D.S. Buchanan, D.B. Crum, D. Cox, and J.P. Wikswo, U.S.A.

AM-79 12 Preliminary Measurements with MicroSQUID
J.P. Wikswo, R.N. Friedman, A.W. Kilroy, J.M. van Egeraat, and D.S. Buchanan, U.S.A.

AM-43 13 Distributed Sequential Activity of the Human Brain Detected Magnetically by CryoSQUIDs
G.A. Klemic, D.S. Buchanan and S.J. Williamson, U.S.A.

16:30 - 17:00 **Refreshments**

17:00 - 18:30 **Workshop** (Room 110)

Numerical Modeling of the Body
Moderator: M.J. Peters
M. Hämäläinen, C. Purcell, E. Ducla-Soares, A. van Oosterom

Poster Session (Golding Lounge)
Chair: S.N. Erné, Physikalisch Technische Bundesanstalt, Berlin, F.R.G.

Somatomotor Activity

AS-16 1 Source Localisation from Somatosensory Neuromagnetic Data
R.J-M. Grognard and A.D. Seagar, Australia

AS-14 2 Short Latency Median Nerve Somatosensory Evoked Magnetic Fields and Electrical Potentials
C.L. Lim, C. Rennie, C. Yiannikas, E. Gordon, G.J. Sloggett, R.J-M. Grognard, and A.D. Seagar, Australia

EU-85 3 On the Frontal Components of Somatosensory Scalp Responses to Median Nerve Stimulation: Neuromagnetic Demonstration of an Anterior Midline Generator
P.M. Rossini, L. Narici, V. Pizzella, G.L. Romani, and R. Traversa, Italy

AM-03 4 Spatiotemporal Modeling of Somatosensory Evoked Magnetic Fields
C. Baumgartner, W.W. Sutherling, and D.S. Barth, Austria and U.S.A.

AM-36 5 Magnetic Localization of Somatically Evoked Responses in the Human Brain
J. Suk, T. Yamamoto, U. Ribary, and R.R. Llinás, U.S.A.

EU-57 6 Evoked and Spontaneous Magnetic Activity of the Human Somatosensory Cortex
J. Tiihonen, R. Hari, M. Kajola, and M. Hämäläinen, Finland

AS-27	7	ECD Tracing for Middle Latencies of Neuromagnetic Responses to Right Tibial Nerve Stimulation Y. Uchikawa, T. Hasegawa, M. Kotani, K. Kida, H. Yamamoto, and H. Hosaka, Japan
AM-54	8	Localization of the Readiness Field Using Magnetoencephalography (MEG) and Magnetic Resonance Imaging (MRI) K.Y. Haaland, G.W. Sullivan, and E.R. Flynn, U.S.A.
EU-32	9	Neuromagnetic Localization of Sensori-Motor Cortex Sources Associated with Voluntary Movements D. Cheyne, R. Kristeva, W. Lang, G. Lindinger, and L. Deecke, Austria
AS-23	10	Measurement of Neuromagnetic Fields Preceding Triggered and Self- Paced Finger Movements Y. Mizutani, K. Okano, and S. Kuriki, Japan
AM-61	11	Neuromagnetic Localization of Late Pain-Related Fields R. Wakai, J. Joseph, E. Howland, F. Potenti, M. Backonja, O. Baffa, and C. Cleeland, U.S.A.
AM-37	12	Multi-Dimensional Vector Analysis of Evoked Responses J. Suk and D. Brenner, U.S.A.

Friday, August 18

09:00 - 10:30 **Plenary Session** (Tishman Auditorium)
Chair: M. Hoke, Westfälische Wilhelms-Universität Münster, Münster, F.R.G.

IN-12 *Volume Current Effects in MEG and Modeling*
E. Ducla-Soares, National Institutes of Health, Bethesda, U.S.A. and University of Lisbon, Lisbon, Portugal

IN-13 *Ambassador of Thorasic Modeling*
A. van Oosterom, Catholic University, Nijmegen, The Netherlands

10:30 - 11:00 **Refreshments**

11:00 - 12:30 **Poster Session** (Golding Lounge)
Chair: J.P. Wikswo, Jr., Vanderbilt University, Nashville, U.S.A.

Methods and Shielding

AM-22 1 Brain Based Coordinate System for MEG
J. Joseph, U.S.A.

AM-26 2 The LANL Gradiometer Orientation Device
D.B. van Hulsteyn, L. McGavran, L. Heller, J. George, and E. Flynn, U.S.A.

EU-44 3 A Magnetometer Position Indicator for Multichannel MEG Measurements
S. Ahlfors and R.J. Ilmoniemi, Finland

AM-49 4 Subject and Gradiometer Positioning for MEG Recording: A Preliminary Report
P. Teale, J. Zimmerman, J. Edrich, S. Linnville, and M. Reite, U.S.A.

AS-20 5 The Positioning of Magnetometer Pickup Coil in Dewar by Artificial Signal Source
M. Higuchi, K. Chinone, N. Ishikawa, H. Kado, N. Kasai, M. Nakanishi, Y. Ishibashi, and M. Koyanagi, Japan

AM-19 6 Neuromagnetometer® Calibration Using an Array of Small Coils
D.S. Buchanan and D.N. Paulson, U.S.A.

AM-40 7 Spatial Fourier Technique for Calibrating Gradiometers
A.C. Bruno, S.D. Soares, C.S. Dolce amd P. Costa Ribeiro, Brazil

EU-41 8 On the Spatial Locating Accuracy of Multichannel Magnetometers
J. Knuutila and M.S. Hämäläinen, Finland

AM-58 9 Experimental Accuracy of Localization of Current Dipoles in a Spherical Phantom
D.N. Paulson and D.S.Buchanan, U.S.A.

AM-25 10 Noise Cancellation for Biomagnetic Measurements
S.E. Robinson, U.S.A.

EU-03 11 Electronic Noise Suppression in Neuromagnetic Multichannel System
A.A. Alexandrov, A.Y. Lipovich, A.N. Matlashov, E.S. Mazaev, and Yu.E. Zhuravlev, U.S.S.R.

EU-31 12 Thermal Noise of a Biomagnetic Measurement Dewar
J. Nenonen, T. Katila, and J. Montonen, Finland

AM-82 13 Noise Cancellation in Biomagnetometers
J. Vrba, J. McCubbin, S. Lee, A. A. Fife, M. B. Burbank, Canada

AM-27 14 Three-Dimensional Volumetric Reconstruction for Neuromagnetic Source Localization
J.S. George, P.S. Jackson, D. Rankin, and E.R. Flynn, U.S.A.

EU-86 15 An Integrated Stimulus Generation and Data Acquisition System for the Investigation of Auditory Evoked Magnetic Fields
E. Ross, B. Lütkenhöner, M. Hoke, and C. Pantev, F.R.G.

AS-06 16 Design Method of Magnetically Shielded Room by Scale Model Experiment
K. Yamazaki, K. Unno, and K. Seino, Japan

AS-30 17 Preparation of High-T_C Superconducting Magnetic Shields by a Low Pressure Plasma Spraying
K. Tachikawa, O. Tsukamoto, Y. Shimbo, K. Niki, M. Ono, M. Kabasawa, and S. Kosuge, Japan

12:30 - 14:00 **Lunch**

14:00 - 16:00 **Workshop** (Room 110)

Multisensor SQUID Instrumentation
Moderator: H. Kado
S. Erné, R. Ilmoniemi, A.N. Matlashov, K. Shirae, and J.P. Wikswo, Jr.

Poster Session (Golding Lounge)
Chair: O.V. Lounasmaa, Helsinki University of Technology, Espoo, Finland

Spontaneous Brain Activity

EU-90 1 Phase Relationships in Synchronous Magnetic and Electric Alpha Activity in the Parieto-Occipital Area of the Human Brain
V.L. Vvedensky, K.G. Gurtovoy, A.P. Grebenkin, S.P. Naurzakov, V.I. Ozhogin, and S.Yu. Shabanov, U.S.S.R.

EU-89 2 Phase Distribution of the Alpha Rhythm Over the Occipital Head Measured by a Multichannel Magnetometer
K.G. Gurtovoy, M.J. Kajola, and V.L. Vvedensky, U.S.S.R. and Finland

AS-24 3 Coherence Analysis of Alpha Rhythm MEG Measured at Two Positions Simultaneously
H. Kado, N. Kasai, M. Higuchi, M. Nakanishi, and M. Koyanagai, Japan

AM-42 4 Method for Locating Sources of Human Alpha Activity
S.J. Williamson, J.-Z. Wang, and R.J. Ilmoniemi, U.S.A. and Finland

EU-83 5 Neuromagnetic Imaging of Synchronized Alpha and Mu Activity
L. Narici, G. Iori, I. Modena, G.L. Romani, G. Torrioli, R. Traversa, and P.M. Rossini, Italy

AS-12 6 Sleep Spindles in Magnetoencephalography and Electroencephalography
N. Nakasato, K. Hatanaka, K. Seki, T. Yoshimoto, and H. Kado, Japan

Higher Brain Functions

AM-32 7 Localization of the Generators of the Magnetic P3
J.D. Lewine, S. Roeder, M. Oakley, D. Arthur, C. Aine, J. George, and E. Flynn, U.S.A.

EU-07 8 Features of the Magnetic P-300 Wave
Z. Dunajski, C.H. Massen, G.P.H. Hamers, and C.H.M. Brunia, Poland and The Netherlands

EU-73 9 Scalp-Topography of Endogeneous Components Related to Selective Attention, Memory Search and Language Processing
A.A. Wijers, M. Peters, E. Van Der Haven, and G. Mulder, The Netherlands

AM-05 10 Cortical Resource Allocation During Mental Rotation Determined by Magneto- and Electro- Encephalography
G.F. Wilson, C. Busch, A. Papanicolaou, C. Oliver, and C. Orr, U.S.A.

AM-44 11 Alpha Suppression Related to a Cognitive Task
B.J. Schwartz, C. Salustri, L. Kaufman, and S.J. Williamson, U.S.A. and Italy

AM-45 12 Visualizing and Rhyming Cause Differences in Alpha Suppression
L. Kaufman, M. Glanzer, Y. Cycowicz, and S.J. Williamson, U.S.A.

16:00 - 16:30 **Plenary Session** (Tishman Auditorium)

Closing Program
L. Kaufman, Co-Chair
S.J. Williamson, Co-Chair

M. Hoke, Chair, 8th International Conference on Biomagnetism,
Münster, F.R.G.

19:00 - 21:00 **Banquet** (Courtyard, Third Avenue North Residence Hall *)

* In case of rain: Bobst Library, Washington Square South, 12th Floor.